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09/674,022	02/14/2001	Frank Kowalewski	10191/1554	8945

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EXAMINER
KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	09/674,022	KOWALEWSKI, FRANK
	Examiner	Art Unit	
	Pankaj Kumar	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*27 December 2006*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>*10-18*</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>*10-18*</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed have been fully considered but they are not persuasive.

2.   Applicant argues that why and how one would combine the references is still open. This
is not persuasive. Why and how one would combine is answered by the obviousness statement
in this action (slightly different than the prior action) which includes the motivation for
combining which was provided in the prior art. Also, the test for obviousness is not whether the
features of a secondary reference may be bodily incorporated into the structure of the primary
reference; nor is it that the claimed invention must be expressly suggested in any one or all of the
references. Rather, the test is what the combined teachings of the references would have
suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871
(CCPA 1981).

3.   In response to applicant's argument that the examiner's conclusion of obviousness is
based upon improper hindsight reasoning, it must be recognized that any judgment on
obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so
long as it takes into account only knowledge which was within the level of ordinary skill at the
time the claimed invention was made, and does not include knowledge gleaned only from the
applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392,
170 USPQ 209 (CCPA 1971).

4.   Applicant argues one would not know how to combine to cancel ISI and/or MAI at the
sender and hence allow a significant simplification of the hardware at the receiving side. This is
not persuasive since applicant has not claimed this.

5.   As per arguments related to the objectives of the invention, they are not persuasive since

the objective is not the measure of the invention but rather the claim is the measure of the

invention. When the references teach the claim limitations and it would be obvious to one

skilled in the art at the time of the invention to combine the references, then based on 35 USC

103, the claim must be rejected.

6.   Applicant argues that Kleider and Klien are for a receiver and not a preequalizer at a

transmitter. This is not persuasive since Kleider is both transmitter (i.e. Kleider fig. 1 214

transmit parameter determination and 212 transmitting through the channel 206) and receiving.

Klein recites in abstract line 2 "transmitting" as well as "transmission" in fig. 1. As per

preequalization argument, this amounts to applicant's arguments against the references

individually, one cannot show nonobviousness by attacking references individually where the

rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim Rejections - 35 USC § 101

7.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

8.   Claims 10, 13, 14, 17, 18 are rejected under 35 U.S.C. 101 because the claimed invention

lacks patentable utility. The claims merely recite an algorithm for spreading and preequalizing

signals to be transmitted without a post-processing step and they do not have a practical

application.

Claim Rejections - 35 USC § 103

9.　　The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10.　　Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kleider et al (US 6,084,919) in view of Bruckert et al. (US 5,822,359) and Klein et al. ("Zero

Forcing and Minimum Mean-Square-Error Equalization for Multiuser Detection in

Code-Division Multiple-Access Channels" IEEE Trans. Vehic. Tech., Vol.45 1996, pp 276-287).

11.　　Regarding claim 10, in FIG. 1 and FIG.2, Kleider et al. discloses an apparatus and its

method, the elements 202 & 204 of FIG. 1 (or elements 12 & 16 of FIG.2 which is the detail of

the FIG. 1). The apparatus comprises: a modulator (FIG. 1 block 212 or FIG.2 block 24); a

channel estimator (transmit parameter determination, FIG. 1 element 214 or FIG.2 element 26)

coupled to the modulator. In FIG. 1, the channel estimator (transmit parameter determination unit

214, 218) determines optimal parameters for the transmit signal (column 3 lines 50-60 '919), so

basing on information received from the channel estimator the modulator performs the pre-

equalization.

12.　　Also, Kleider teaches preequalization taking into account all of the different codes

(Kleider: using spread spectrum techniques such as code division multiple access and hence

different codes for different users whose codes are sent through the channel and then its version

is received which affects preequalization) and transmission properties (Kleider col. 4 line 40; col.

5 lines 15-17; channel noise) of the radio channels (Kleider fig. 3, 4: multiple channels).

13.   However, Kleider et al. does not explicitly show spreading for the CDMA the technique

that the Kleider et al.'s system implemented for (column 2 lines 50-65 '919) and the pre-

equalization taking into account radio channel interference corresponding to at least one of

intersymbol interference and multiple access interference.

14.   Regarding the code generator, further Bruckert et al. teaches and shows spreading

(Bruckert et al. fig. 3: 206) and the code generator coupled to the modulator to generate all of the

different codes of mobiles in FIG. 1 block 116 (column 2 lines 30-35 and column 10 lines 31-40

'359). As Kleider et al.'s unit for CDMA system, it provides the code generator generating all

different codes of different users that the unit needs to communicate with (FIG.5 and column 10

lines 5-20 '919). Thus, it would have been obvious to one of ordinary skill in the art at the time

of the invention was made to implement the teachings of Bruckert et al. into Kleider et al. since

Kleider et al. suggests modulation/coding in fig. 1 element 212 (something broad) in general and

Bruckert et al. suggests the beneficial use of code generator coupled to the modulator such as to

generate spread codes for different users in order to communicate with all users in the radio

channels in the mobile cellular system in the analogous art of communication.

15.   Regarding the pre-equalization taking into account radio channel interference

corresponding to at least one of intersymbol interference and multiple access interference, further

Klein et al. teaches the pre-equalization in the data estimation (Fig. 1 IEEE) of the modulator

taking into account radio channel interference corresponding to at least one of intersymbol

interference and multiple access interference (III. Data Estimation Techniques, page 218, right

column III.A., the first paragraph). As Kleider et al.' system is avoiding inter-system interference

(column 1, lines 21-24 '919), other interferences caused by the transmission (column 1 lines 32-

37 '919), and intentional and unintentional interferences (column 1, lines 38-45 '919). Thus, it

would have been obvious to one of ordinary skill in the art at the time of the invention was made

to implement the teachings of Klein et al. into Kleider et al. since Kleider et al. suggests

preequalization (something broad) in general and Klein et al. suggests the beneficial use of ISI

and MAI being taken into account by an equalizer such as to have a better performance

equalization technique to reduce interferences (V. Conclusion, page 286 IEEE) in the analogous

art of communication.

16.   Regarding claim 14, in FIG. 1 and FIG.2, Kleider et al. discloses an apparatus and its

method, the elements 202 & 204 of FIG. 1 (or elements 12 & 16 of FIG.2 which is the detail of

the FIG. 1). The apparatus comprises: a modulator (FIG. 1 block 212 or FIG.2 block 24); a

channel estimator (transmit parameter determination, FIG. 1 element 214 or FIG.2 element 26)

coupled to the modulator. In FIG. 1, the channel estimator (transmit parameter determination unit

214, 218) determines optimal parameters for the transmit signal (column 3 lines 50-60 '919), so

basing on information received from the channel estimator the modulator performs the pre-

equalization.

17.   Kleider also teaches channel estimator providing transmission properties (Kleider col. 4

line 40; col. 5 lines 15-17; channel noise) of all of the radio channels (Kleider fig. 3, 4: multiple

channels); preequalization being based on information received from the code generator and the

channel estimator (Kleider fig. 2: 20, 22 coders data being sent through the channel and then

received in 16 which then influences preequalization via 40; fig. 1: 218)

18.   However, Kleider et al. does not explicitly show spreading for the CDMA the technique

that the Kleider et al.'s system implemented for (column 2 lines 50-65 '919) and the pre-

equalization taking into account radio channel interference corresponding to at least one of

intersymbol interference and multiple access interference.

19.   Regarding the code generator, further Bruckert et al. teaches and shows spreading

(Bruckert et al. fig. 3: 206) and the code generator coupled to the modulator to generate all of the

different codes of mobiles in FIG. 1 block 116 (column 2 lines 30-35 and column 10 lines 31-40

'359). As Kleider et al.'s unit for CDMA system, it provides the code generator generating all

different codes of different users that the unit needs to communicate with (FIG.5 and column 10

lines 5-20 '919). Thus, it would have been obvious to one of ordinary skill in the art at the time

of the invention was made to implement the teachings of Bruckert et al. into Kleider et al. since

Kleider et al. suggests modulation/coding in fig. 1 element 212 (something broad) in general and

Bruckert et al. suggests the beneficial use of code generator coupled to the modulator such as to

generate spread codes for different users in order to communicate with all users in the radio

channels in the mobile cellular system in the analogous art of communication.

20.   Regarding the pre-equalization taking into account radio channel interference

corresponding to at least one of intersymbol interference and multiple access interference, further

Klein et al. teaches the pre-equalization in the data estimation (Fig. 1 IEEE) of the modulator

taking into account radio channel interference corresponding to at least one of intersymbol

interference and multiple access interference (III. Data Estimation Techniques, page 218, right

column III.A., the first paragraph). As Kleider et al.' system is avoiding inter-system interference

(column 1, lines 21-24 '919), other interferences caused by the transmission (column 1 lines 32-

37 '919), and intentional and unintentional interferences (column 1, lines 38-45 '919). Thus, it

would have been obvious to one of ordinary skill in the art at the time of the invention was made

to implement the teachings of Klein et al. into Kleider et al. since Kleider et al. suggests

preequalization (something broad) in general and Klein et al. suggests the beneficial use of ISI

and MAI being taken into account by an equalizer such as to have a better performance

equalization technique to reduce interferences (V. Conclusion, page 286 IEEE) in the analogous

art of communication.

21.   Regarding claims 11-12 & 15-16, In FIG.5 and column 10 lines 5-20, Kleider et al.

discloses the data is transmitted from the base station to the mobile stations and from the mobile

stations to the mobile station.

22.   Regarding claim 17, In FIG.5 (column 10 lines 5-20), Kleider et al. discloses a system

comprising: a base station (element 62) and mobile stations (communicators 60 and 64). The

base station and mobile stations have the same structure as the communication unit shown in

FIG. 1 or FIG.2, wherein the base station or the mobile station comprises both the transmitting

unit and receiving unit: element 202 FIG. 1 or element 12 FIG.2 is the transmitting unit, element

204 FIG. 1 or element 16 FIG.2 is the receiving unit. Therefore Kleider et al. discloses the

invention 'of the claim as cited (refer to the rationale of the rejection of claims 10 & 14).

23.   Also Kleider teaches the data of different mobile stations being spread with different

codes (Kleider: using spread spectrum techniques such as code division multiple access and

hence different codes for different users); channel estimator providing transmission properties

(Kleider col. 4 line 40; col. 5 lines 15-17; channel noise) of all of the radio channels (Kleider fig.

3, 4: multiple channels); preequalization being based on information received from the code

generator and the channel estimator (Kleider fig. 2: 20, 22 coders data being sent through the

channel and then received in 16 which then influences preequalization via 40; fig. 1: 218)

24.   Regarding claims 13 & 18, In FIG. 1, Kleider et al. discloses the transmit parameter

determination block 214 (or the channel classification monitor block 26 of FIG.2) ascertaining

the channel properties from data transmissions from the block 204 to the block 202 (or from

block 16 to block 12 in FIG.2), wherein the block 202 of FIG. 1 (block 12 of FIG.2) is in the

base station, the block 204 of FIG. 1 (block 12 of FIG.2) is in the mobile station.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pankaj Kumar
Primary Examiner
Art Unit 2611

PK